

Navy Clothing & Textile

Research Facility

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PROTECTIVE CLOTHING

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Navy Clothing & Textile Research Facility

Over 120 Years of Service to the Navy



Mission:

Research, Development,
Testing, Evaluation,
& Engineering Support
for both Uniforms
and
Protective Clothing

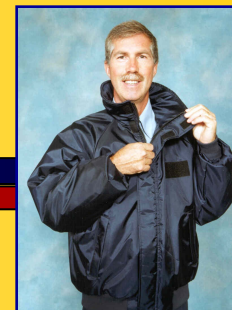




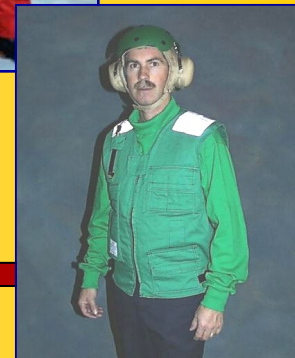
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- Fire
- Flash
- Steam
- Flooding
- Shrapnel
- Cold Stress
- Heat Stress
- Sailor Overboard
- Chemical Agents
- Toxic Chemicals





Navy Protective Clothing



***Ready. Resourceful.
Responsive!***

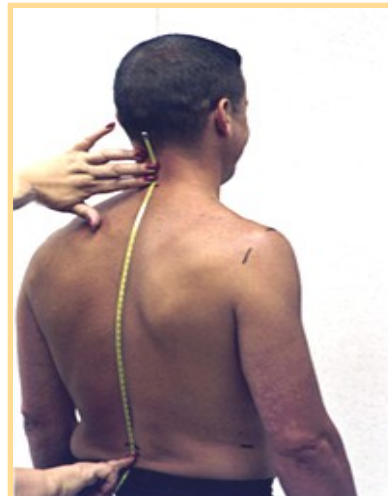


Mission Areas

Navy Clothing & Textile Research Facility

Dress Clothing
Uniform
Development & Evaluation
Anthropometrics & Sizing
Certification & QA
Pattern & Prototype Development

USPS
USCG
USMC





Navy Clothing & Textile Research Facility

Mission Areas

NDI
COTS
OGA

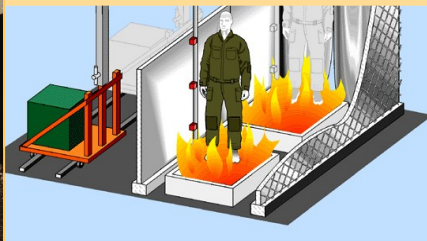


SOCOM
SBIR

Protective Clothing
**Firefighting &
Flame Resistant
Clothing**
**Burn Injury
Assessment**
Anti-Exposure Suits
**Chemical/Biological
Protective
Garments**
**Protective
Equipment**
Life Preservers



Nat'l Fire
Protection
Assn

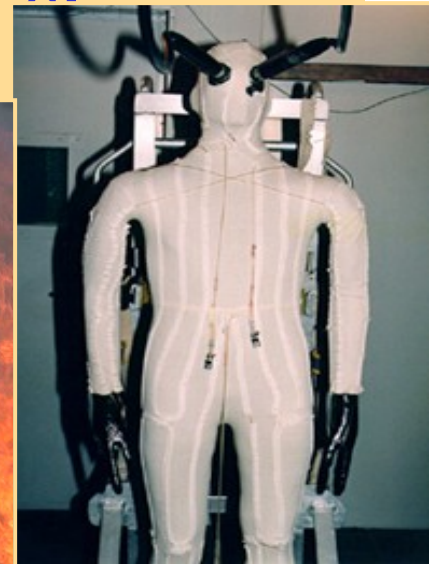
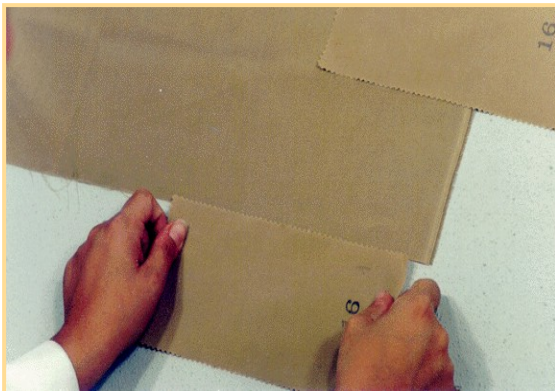


Joint
Service

Mission Areas

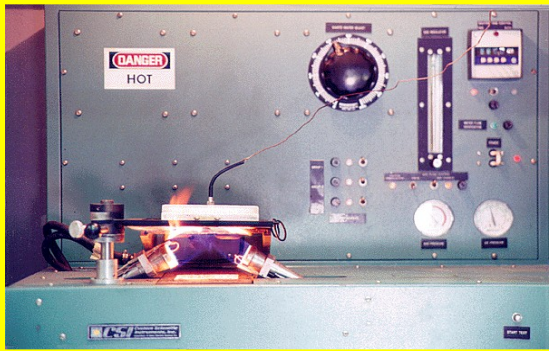


**Testing &
Evaluation
Textile
Shade Control
Biophysical
Thermal and
S**





Thermal & Flame Laboratory



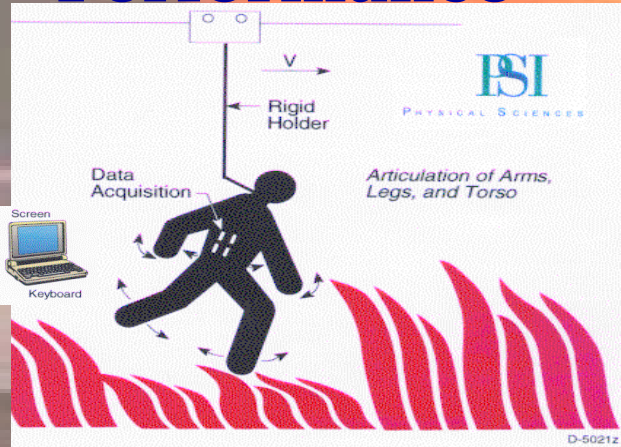
**Thermal
Protective
Performance**



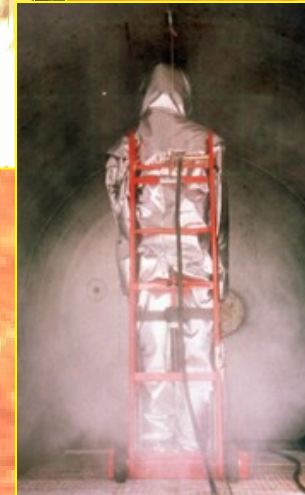
**Convective/
Radiant
Oven**



**Dynamic
Full Scale
Fire Test
Facility**

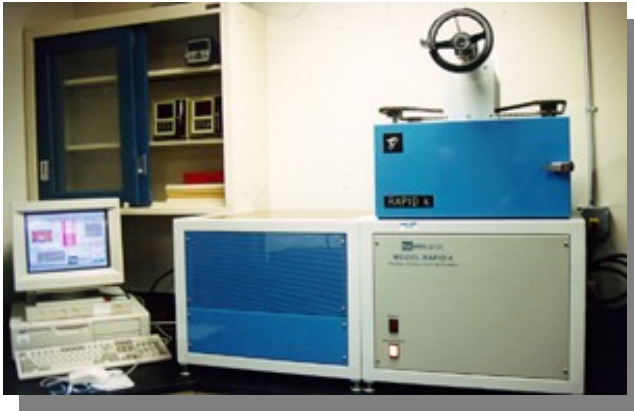


**Articulate
d Manikin**

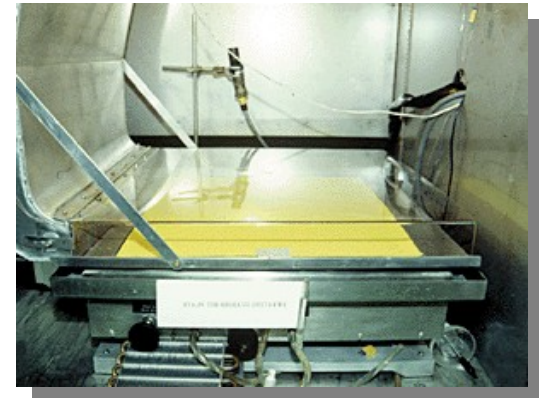


**Steam
Chamber**

Biophysical Laboratory



Rapid k



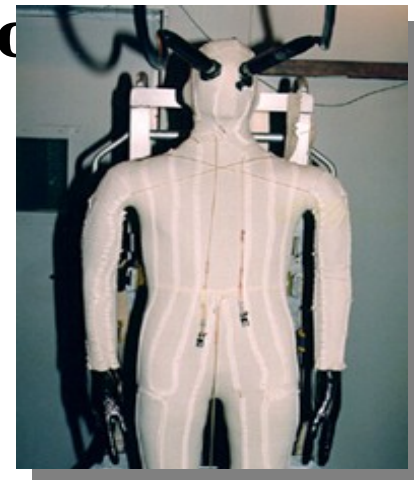
**Sweating
Guarded
Hot Plate**



**Thermal
Hand**



**Thermal
Foot**



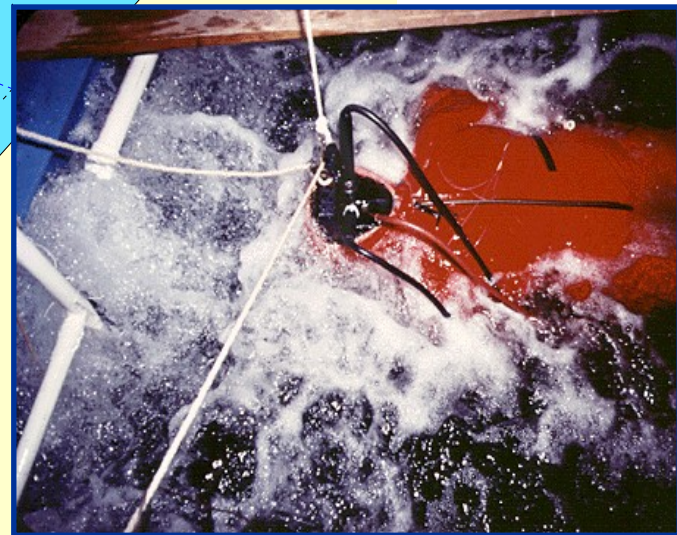
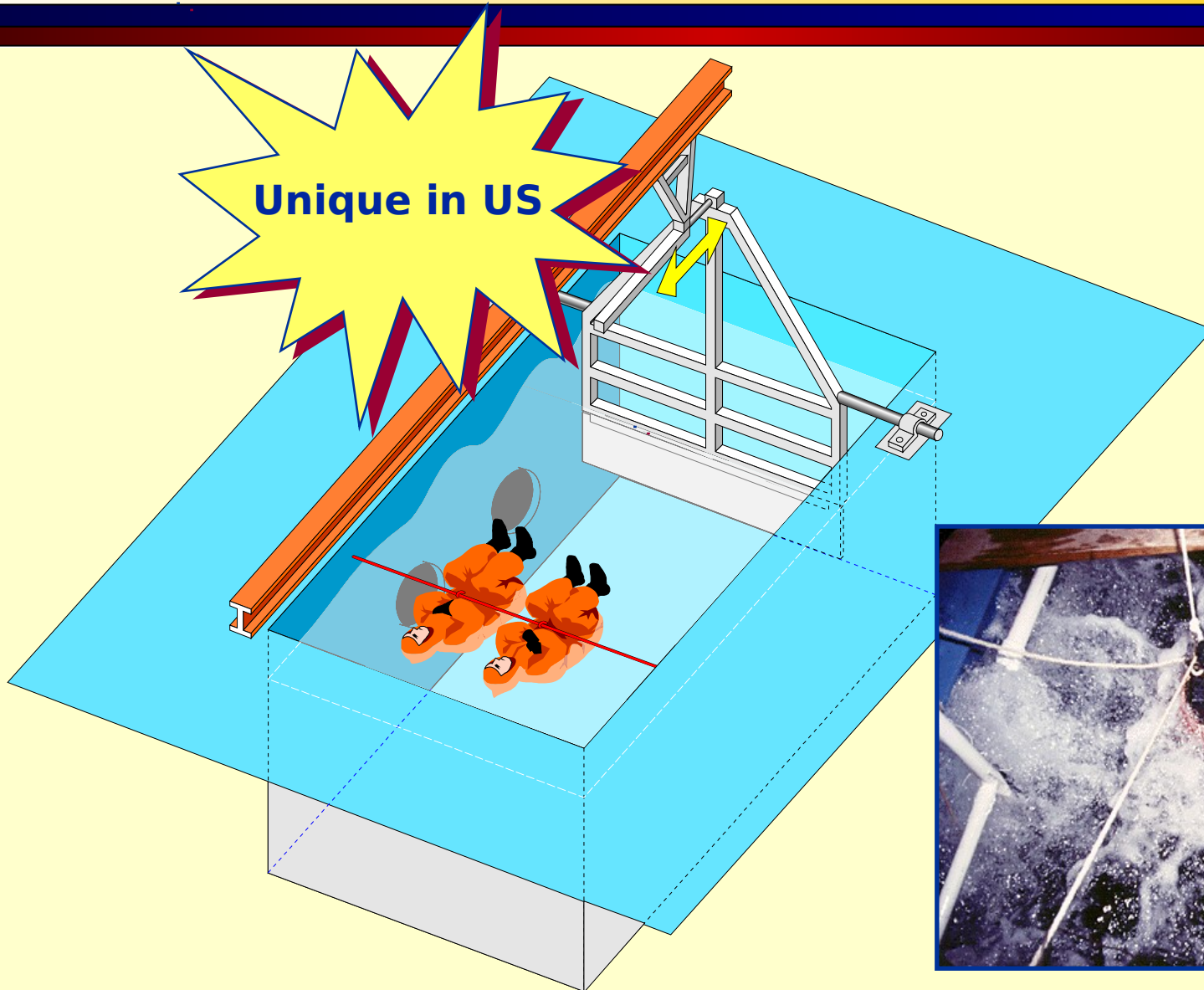
**Thermal
Manikin**



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Hydro-Environmental Simulator

Unique in US





Navy Protective Clothing Board

MISSION

Consider any matter related to Navy organizational shipboard and flight line protective clothing for which a perceived problem exists or for which a possible improvement can be made

GOALS

- Provide a single POC for the Fleet for reporting operational deficiencies and concerns**
- Provide a forum for joint decision making by Navy TYCOMS and Systems Commands**
- Assure adequate protection of shipboard personnel**
- Prevent mishaps, thereby eliminating deaths, injuries, and lost work days in an ever-decreasing workforce.**



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Navy Protective Clothing Board

VOTING MEMBERS

NAVSUP (ACOS-NFS) chair

SURFLANT

SURFPAC

SUBLANT

SUBPAC

AIRLANT

AIRPAC

COMLANTFLT

COMPACFLT

ADVISORY MEMBERS

NAVSEA (SEA-05, SEA-08)

NAVAIR (PMA-251, PMA-202)

DEPUTY ASST SECNAV
(Safety)

NCTRF

NAWC

NSWC

DSCP

GSA

COMOPTEVFOR

NAVSAFECEN

BUMED

INSURV

OTHERS (AS NEEDED)

**Supported by a Fleet
Operational Advisory Group**



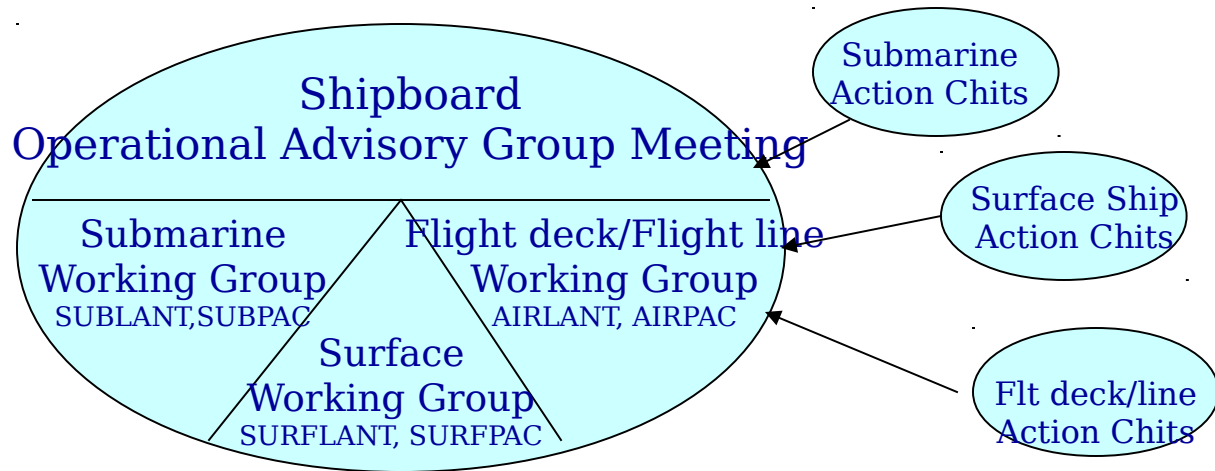
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Navy Protective Clothing Board

FUNCTIONS

- Provide input on fleet requirements
- Identify and prioritize product improvement and new product development efforts
- Establish wear policies
- Lobby resource sponsors to assure adequate funding to support board decisions **(including funding for ships to buy the needed items!!)**
- Monitor progress of field activities
- Provide resources and information to the Fleet on authorized protective clothing and sources of supply

**Fleet Identify &
Prioritize Problems**



**Fleet Recommended
Prioritized List of Problems**

Navy Protective Clothing Board



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Commercial Product Certification Program

- **Concept**
 - Administered under the NPCB
 - Manufacturers warrant that items meet Navy requirements
 - Items procured through DSC-P Prime Vendor Program or DVD
 - Requires periodic re-certification to assure continued performance and quality
 - Addresses FAR requirement for competition in procurement

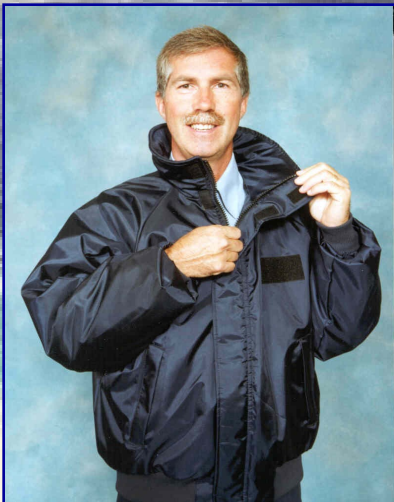


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Protective Clothing Website

- **Naval Safety Center Home Site**
- **Links to SYSCOM websites:**
 - **NAVSUP**
 - **NAVAIR**
 - **NAVSEA**

Flight Deck Clothing





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Flight Deck Clothing

- Flight Deck Goggle
- NVG Goggle
- Cold Weather Jacket
- MK-1/Man-Overboard Indicator (MOBI)
- Flight Deck Boots
- Flight Deck Trouser
- Flight Deck Jersey
- Wet Weather Clothing

Flight Deck Goggle

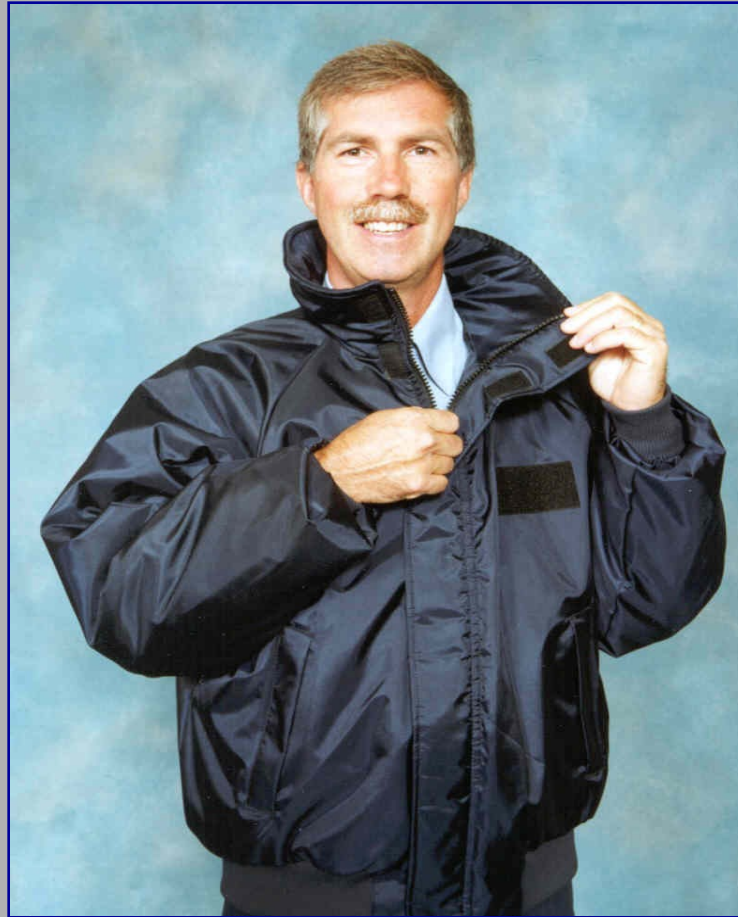


Stock #NSN 4210-01-492-
5720

NVG Goggle

- Potential commercial item has been identified
- Has proven NVG compatibility – used by special forces
- Need to conduct fleet evaluation to confirm comfort and acceptability for extended wear
- Issue: Prioritization/limited funding

FR Cold Weather Jacket



Flame Resistant Nomex



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FR Cold Weather Jacket

- Adequate jacket quantities now available in five sizes (S, M, L, XL, and XXL) through DSC-P

- Small	8415-01-495-0884
- Medium	8415-01-495-0890
- Large	8415-01-495-0892
- X-Large	8415-01-495-0893
- XX-Large	8415-01-495-0894





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MK-1/Inherently Buoyant Vest/ MOBI Integration

- MK-1 now available from 3 sources as COTS through DSC-P Prime Vendor contract
- Inherently Buoyant Vest soon to be available from 1 source as COTS through DSC-P Prime Vendor contract
- Working with industry to modify vests for MOBI integration and water activated strobe light
 - Plan to modify in-service vests for MOBI but not for strobe light

Flight Deck Boots

- Wear Trial Completed
 - Duration: 4 months
 - Data Objectives:
 - Two carriers:
 - USS Roosevelt
 - USS Nimitz
 - Comfort
 - Durability
 - Water-proofness
 - Mission Compatibility



Flight Deck Boots

- Wear Trial Completed

- 4 boots (80 pairs of each):

- Total Fire Group Wildland Firefighter Boot – Style 2000NM
 - Belleville Style 700ST – USMC Combat boot with steel toe
 - Cove Style 27713
 - Standard Non-sparking Commercial Boot (PD 99-10)-replaced Mil-spec boot in 2002

	Total Fire	Belleville	Cove	Std boot
Waterproof leather upper	X		X	X
Commercial Last	X	X	X	X
Gore-Tex Waterproof Bootie		X	X	
Formed Cushion insole	X	X	X	X
Chevron nitrile rubber outsole			X	X
Cushion crepe rubber midsole			X	X
Vibram Sierra all rubber sole	X			
Vibram Sierra nitrile rubber outsole		X		
Polyurethane midsole		X		
Padded comfort collar			X	X
Eyelet and speedlace system	X	X	X	X
Leather/cordura nylon upper		X		
Cost	\$110	\$100	\$107	\$70

- **Wear Trial Results:**

- All boots generally rated at least “good” for:
 - Appearance
 - Fit, Ankle support, toe comfort and overall comfort
 - Breathe-ability
 - Bulk
 - Tactility in operating environment
 - Traction on wet and oily surfaces
 - Resistance of sole to FOD pick-up
- Belleville boot received slightly higher ratings than the other 3 boots for many characteristics
- Belleville and Cove boots both rated highest for water-proofness – both include a Gore-tex© waterproof bootie
- Total Fire Boot rated poor by 48% of testers on the USS Roosevelt for water-proofness
- Current stock boot generally received high ratings except for water-proofness



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Flight Deck Boots

- Issues:
 - \$30 cost increase to add a Gore-tex© waterproof bootie
- Path-Ahead
 - Update PD 99-10 and provide to DSC-P
 - Attrition phase out of standard boot

Flight Deck Jersey /Trouser





FR FLIGHT DECK TROUSER

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28 short	4210-01-500-6964	34 long
4210-01-500-7278		

28 reg	4210-01-500-6984	34 xlong
4210-01-500-7286		

28 long	4210-01-500-6986	36 short
4210-01-500-7290		

28 xlong	4210-01-500-6989	36 reg
4210-01-500-7291		

30 short	4210-01-500-6991	36 long
4210-01-500-7297		

30 reg	4210-01-500-6994	36 xlong
4210-01-500-7301		

30 long	4210-01-500-6999	38 short
4210-01-500-7304		

30 xlong	4210-01-500-7002	38 reg
4210-01-500-7313		

32 short	4210-01-500-7253	38 long
4210-01-500-7315		

- **Completed Milestones:**
 - Completed Market Survey for Knit Materials
 - Selected 11 materials for evaluation
 - Performed series of laboratory tests
 - Down-selected 2 materials
 - Nomex IIIA Jersey
 - FR Cotton Interlock
 - Manufactured materials in red and green

- **FY-04 Activities:**
 - Manufacture Jerseys – 300 of each material
 - Conduct shipboard evaluation:
 - 2 carriers
 - 200-250 jerseys per carrier
 - 6 month deployment – start ~ June 04

FR Flight Deck Jersey Dupont Project

Background:

- Congressional FY-04 funding “plus-up” in response to Dupont lobbying effort
- Raises visibility of flight deck protection
- To be completed by Sep 05

FR Flight Deck Jersey Dupont Project

Wear Trial Data Objectives:

- Durability/Life cycle cost impact
- Comfort
- Color retention
- Launderability
- Fit/Sizing
- User Acceptability

FR Flight Deck Jersey Dupont Project

Wear Trial Design

Ship	Jerseys/ crewman	Number of crewmen	Total jerseys
1 CVN - East Coast	4	500-700	2000-2800
1 CVN - West Coast	4	500-700	2000-2800
1 LHA/LHD East Coast	3	100-150	300-450
1 LHA/LHD - West Coast	3	100-150	300-450
Total jerseys in test			4600-6500*

*** plus 30% for size tariff = approx 9000 jerseys to procure**

Test Protocol:

- Initial Fit/Issue
- Length - 6 months - full deployment
- Check point mid-cruise
- Final Debrief/data collection
 - Questionnaires
 - Appearance after wear
 - Soiling
 - Pilling
 - Damage
 - General Condition

Wet Weather Clothing

- Current item in system is very-old technology – non-procurable
- NDI authorized a COTs item several years ago and a temporary sole source FAR waiver which since expired
- Definite candidate for certified COTs items supplied through prime vendor contract
- **Issues:**
 - Performance Requirements unclear – need input from NPCB
 - Prioritization/Limited Funding

Work Gloves

- Action Plan:
 - Determine Performance/Design Requirements

Wildland FF Glove Criteria

- Cut resistance
- Puncture resistance
- Dexterity
- Grip
- Heat resistance
- Flame resistance
- Conductive heat resistance
- Thermal performance

Shipboard Glove Reqts

- ?
- ?
- ?
- ?

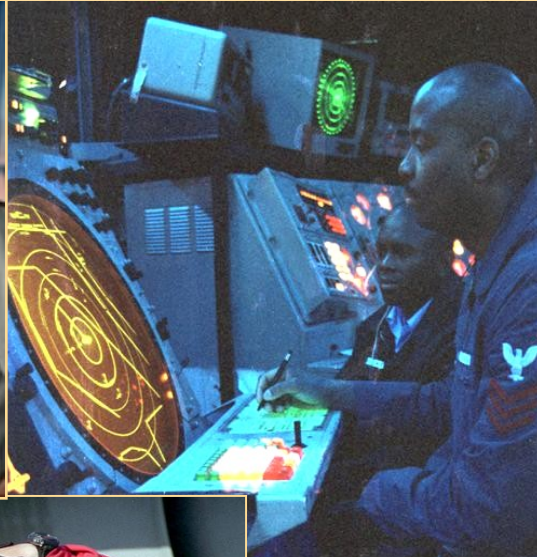
- **Sizing - 5 sizes**
 - Conduct Market Survey based on requirements
 - Conduct Focus Group with Fleet users to select best alternatives (3 max)
 - Procure test articles and evaluate (lab/field)

- **Issue: Prioritization/Limited Funding**



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NCTRF



Protecting those who serve